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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712.936	11/14/2003	Sang Seok Lee	8733.940.00-US	9893
30827	7590	04/07/2005	EXAMINER	
MCKENNA LONG & ALDRIDGE LLP 1900 K STREET, NW WASHINGTON, DC 20006			KOCH, GEORGE R	
			ART UNIT	PAPER NUMBER
			1734	

DATE MAILED: 04/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/712,936

Applicant(s)

LEE ET AL.

Examiner

George R. Koch III

Art Unit

1734

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2005.
2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-118 is/are pending in the application.
4a) Of the above claim(s) 8-10, 48-51, 107 and 118 is/are withdrawn from consideration.
5) ☒ Claim(s) 52-83 and 86-106 is/are allowed.
6) ☒ Claim(s) 1-20, 31, 39-43 and 108-116 is/are rejected.
7) ☒ Claim(s) 22-30, 32-38, 44-47 and 115-117 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/16/2003.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Invention I, the apparatus claims, and species I(a), II(d) and III(g) in the reply filed on 1/13/2005 is acknowledged. Due to allowable subject matter, some of the species have been rejoined.

An action on claims 1-7, 10-47, 52-83, 86-106, and 108-116 follows.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-20, 31 and 43 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-118 of copending Application No. 10/661,472. Although the conflicting claims are not identical, they are not patentably distinct from each other because Claim 1 of the instant invention is an obvious variation of claim 1 of the '472 application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

4. Claims 39-42, and 108-116 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-118 of copending Application No. 10/661,472 in view of Jin (.

As to claim 39, the '472 application discloses all of the limitations of parent claim 1. However, '472 application is silent as to substrate loaders and correspondence between the loader and the upper stage (i.e., grooves).

Jin discloses the use of substrate loaders (item 112) and corresponding grooves (see item 111). One in the art would appreciate that grooves would facilitate quicker loading. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have included corresponding grooves in a bonding apparatus.

As to claim 40, the '472 application discloses that the upper stage includes vacuum holes and electrostatic chucks.

As to claims 41 and 42, Jin does not disclose that the grooves comprise the vacuum holes or the chucks.

As to claim 108, the '472 application in claim 1 discloses a substrate bonding apparatus with an upper stage and a lower stage (see Figure 1). However, '472 application is silent as to substrate loaders and correspondence between the loader and the upper stage (i.e., grooves).

Jin discloses the use of substrate loaders (item 112) and corresponding grooves (see item 111). One in the art would appreciate that grooves would facilitate quicker loading. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have included corresponding grooves in a bonding apparatus.

As to claim 109, the '472 application discloses that the upper stage includes vacuum holes and electrostatic chucks (see paragraph 0020, and 0026).

As to claims 110 and 111, Satoshi does not disclose that the grooves comprise the vacuum holes or the chucks.

As to claim 112, see claim 108 above. The '472 application also does not disclose a substrate loader. Jin discloses a substrate loader with fingers (item 112). One in the art would appreciate that such fingers would enable better substrate gripping capability. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized such a finger in order to achieve better substrate gripping.

As to claim 113, the '472 application discloses a vacuum pipeline and on through hole.

As to claim 114, see claims 108, 112 and 113 above.

This is a provisional obviousness-type double patenting rejection.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 29-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claim 29 recites the limitation "second interval control groove" in line 2. Claim 29 also recites the limitation "the auxiliary sealing member" in line 3. There are insufficient antecedent basis for these limitations in the claim. There is no support in claims 18, 17, or 1 for a first interval control groove or an auxiliary sealing member. (note - it appears that the error is due to the fact that the claim might have been intended to be dependent of claim 28).

8. Claim 30 recites the limitation "the first interval control groove" in line 2. There is insufficient antecedent basis for this limitation in the claim. This is the first instance of "first interval control groove" in the dependency history (claims 29, 18, 17 or 1).

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-7, 31, 43 are rejected under 35 U.S.C. 102(b) as being anticipated by Satoshi (machine translation of JP 2001-356353).

Satoshi discloses a substrate bonding used in fabricating LCD devices, comprising a base frame (stand 2 and frame 3), an upper chamber unit (top chamber 21), a lower chamber unit (bottom chamber 10) mounted to the base frame, wherein the lower chamber unit is selectively connectable with the upper chamber unit (described in paragraph 0033), chamber moving means for raising and lowering the upper chamber unit (the movement is described in paragraphs 0015 and the means are items 29 and 30), an upper stage (item 28) mounted to the upper chamber unit, a lower stage (item 9) mounted to the lower chamber unit. Satoshi also discloses first alignment means for leveling the upper stage with respect to the lower stage (load cell 33, and shafts 59, and associated actuators - see Figures 1 and 2), and second alignment for horizontally aligning the upper stage with respect to the lower stage (image recognition camera - see paragraph 0037).

As to claim 2, Satoshi discloses that the sealing means (O-ring 44) seals an interior space from an external environment, wherein the interior space is definable by connected ones of the upper and lower chamber units.

As to claim 3, Satoshi discloses that the upper and lower stages are arrangeable within the interior space (see paragraph 0037) and that the sealing means includes a central sealing member (O-ring 44), wherein the central sealing member defines the lateral boundary of the interior space.

As to claim 4 and 5, Satoshi discloses that the central sealing member includes an elastic member (such as an O-ring) and that the first seal member includes an O-ring.

As to claim 6, Satoshi discloses a first actuator (items 61 and 62), a first shaft (item 59) and a sensing means (load cell 33) as claimed.

As to claim 7, Satoshi discloses load cells (item 33).

As to claim 31, Satoshi discloses that the chamber moving means includes a driving motor fixed to the base frame (item 40), a drive shaft (item 36) coupled to the drive motor, a connecting part connected to the driving shaft (item 37), a jack part (item 30) connected to the upper chamber unit and a connecting shaft (item 29) having one end connected to the upper chamber unit and the other end connected to receive a driving force from the driving shaft.

As to claim 43, Satoshi discloses at least one passage arranged with the upper stage and intersecting a lower surface of the upper stage (item 41, joint for attraction adsorption), and a suction force transmitter (item 42, attraction tube, and see paragraphs 0018-0021).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1734

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. Claims 11-14 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Satoshi (machine translation of JP 2001-356353).

As to claims 11-14, official notice is taken the sensors and mechanical arrangements of the alignment means claimed are well known and conventional. Satoshi does disclose some elements of the arrangements, such as step motors (item 62), connecting shafts (but not whether they are eccentrically connected), adjusting from opposite sides, and rectangular arrangements. One in the art would immediately recognize that all of these arrangements allow efficient movement of the chamber units, relative to each other. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized such components in the lower chamber in order to improve apparatus functionality.

As to claim 20, Satoshi discloses the use of alignment cameras (paragraph 0037) Satoshi discloses the use cams, actuators and contacting structures similar to cams (see Figures 2 and 3, especially items 82, 81, 60, 59, 58, 61 and 62) for adjusting

chamber elements. Satoshi does not disclose restoring means, such a coil spring. However, official notice is taken that such structures are well known and conventional mechanical structures for ensure proper mechanical functionality of the alignment structures

14. Claims 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Satoshi (the JPO database machine translation of JP 2001-356353) as applied to claim 1 above, and further in view of Miwa (US Patent 5,766,407)

As to claims 15 and 17, Satoshi discloses all of the limitations of claim 1, and also discloses that the upper chamber unit includes an upper side exposed to an external environment and an inner rim portion analogous to an upper chamber plate attached to the lower surface at a periphery (as in claim 15), nor discloses similar structures for the lower base and lower chamber plate (as in claim 17). However, Satoshi discloses one piece construction, and does not suggest the claimed two piece construction (i.e., upper base and upper chamber plates) for these elements.

Miwa, though, discloses that multiple component bonding chambers are known (see, for example, Figure 3). One in the art would appreciate that multiple component chambers allow for smaller replacement parts which would reduce the downtime for maintenance. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used multipiece construction for chamber elements in order to enable smaller replacement parts, thus reducing maintenance downtime.

As to claim 18, Satoshi discloses that the lower chamber plate is movable with respect to the lower base (via elements 4a, 4b, and 4c - see paragraphs 0012-0014).

As to claim 19, Satoshi discloses that the lower chamber unit includes an lower side exposed to an external environment and an inner rim portion analogous to an lower chamber plate attached to the lower surface at a periphery. However, Satoshi discloses one piece construction, and does not suggest the claimed two piece construction for these elements.

Miwa, though, discloses that multiple component bonding chambers are known (see, for exaple, Figure 3). One in the art would appreciate that multiple component chambers allow for smaller replacement parts which would reduce the downtime for maintenance. Thererfore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used multipiece construction for chamber elements in order to enable smaller replacement parts, thus reducing maintenance downtime.

15. Claims 39-42, 108-114 are rejected under 35 U.S.C. 103(a) as being unpatentable over Satoshi (machine translation of JP 2001-356353) in view of Jin (US Patent 5,979,739).

As to claim 39, Satoshi discloses all of the limitations of parent claim 1. However, Satoshi is silent as to substrate loaders and correspondence between the loader and the upper stage (i.e., grooves).

Jin discloses the use of substrate loaders (item 112) and corresponding grooves (see item 111). One in the art would appreciate that grooves would facilitate quicker

loading. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have included corresponding grooves in a bonding apparatus.

As to claim 40, Satoshi discloses that the upper stage includes vacuum holes and electrostatic chucks (see paragraph 0020, and 0026).

As to claims 41 and 42, Satoshi does not disclose that the grooves comprise the vacuum holes or the chucks.

As to claim 108, Satoshi discloses a substrate bonding apparatus with an upper stage and a lower stage (see Figure 1). However, Satoshi is silent as to substrate loaders and correspondence between the loader and the upper stage (i.e., grooves).

Jin discloses the use of substrate loaders (item 112) and corresponding grooves (see item 111). One in the art would appreciate that grooves would facilitate quicker loading. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have included corresponding grooves in a bonding apparatus.

As to claim 109, Satoshi discloses that the upper stage includes vacuum holes and electrostatic chucks (see paragraph 0020, and 0026).

As to claims 110 and 111, Satoshi does not disclose that the grooves comprise the vacuum holes or the chucks.

As to claim 112, see claim 108 above. Satoshi also does not disclose a substrate loader. Jin discloses a substrate loader with fingers (item 112). One in the art would appreciate that such fingers would enable better substrate gripping capability.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized such a finger in order to achieve better substrate gripping.

As to claim 113, Satoshi discloses a vacuum pipeline and on through hole (items 41 and 42 - see paragraph 0020).

As to claim 114, see claims 108, 112 and 113 above.

Allowable Subject Matter

16. Claims 44-47, 115-117 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

17. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record does make obvious a vacuum pump, and discloses a pipeline and through hole, but does not disclose that the suction force transmitter includes a driving part for moving the pipeline within the passage..

18. Claims 22-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

19. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not suggest interval control grooves in the apparatus of claim 1.

20. Claims 32-38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

21. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not suggest interval control means in the apparatus of claim 1.

22. Claims 52-83 are allowed.

23. The following is an examiner's statement of reasons for allowance: The prior art of record does disclose most of the limitations of claim 52 (see rejection of claim 1 above over Satoshi), but does not disclose or suggest interval control grooves in the apparatus.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

24. Claims 86-106 are allowed.

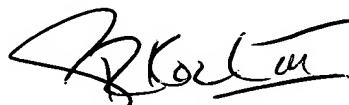
25. The following is an examiner's statement of reasons for allowance: The prior art of record does disclose most of the limitations of claim 86 (see rejection of claim 1 above over Satoshi), but does not disclose or suggest interval control means in the apparatus.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George R. Koch III whose telephone number is (571) 272-1230 (TDD only). If the applicant cannot make a direct TDD-to-TDD call, the applicant can communicate by calling the Federal Relay Service at 1-866-377-8642 and giving the operator the above TDD number. The examiner can normally be reached on M-Th 10-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Fiorilla can be reached on (571) 272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



George R. Koch III
Patent Examiner
Art Unit 1734

GRK
4/3/2005